

The RIGHT ANGLE



*The General
Fireproofing
Company.....
Youngstown, O.*

Fire Prevention Number

Vol.6 Oct,1922 No.4

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Last Year

Value of fire loss
\$332,654.950

Number of lives lost-
23,000 The majority of
these fires were preventable.



Next Year

?



The RIGHT ANGLE

—“Let's get the Right  Slant on this proposition!”

Our Achievement

The United States—The World's Chief Burner

To what shall we attribute our vast increase of national fire waste? Surely not to a lack of knowledge of the construction of fireproof buildings; architects, contractors, building men everywhere are advocating and explaining the nature and uses of building materials and methods which tend to check the inroads of the red demon, Fire. Shall we state that the American people are indifferent to their enormous fire-losses, or, shall we put it that we are gamblers, willing to take a chance that our buildings will escape? Indeed, one is almost led to believe that the latter holds true, for the average man, when broached upon the possibilities of his home catching fire, makes light of it.

But, question that same American citizen upon the possibilities of saving his family in case the seemingly incredible should happen that his home would be burned to the ground. You will find that “he hadn't thought of that!” Also observe his attitude toward a man who knowingly builds a structure so susceptible to flames that but a spark is required to make it a vast bonfire, and then forces his wife and children to live in it! Criminal carelessness is a disagreeable name for such an action, but what would a person call it—thoughtlessness?

The law recognizes no such term when dealing with its offenders. We send our children to schools that must be of fireproof construction, our wives to resorts where the hotels are built under the supervision of fire inspectors; yet require them to live in a home that would disgracefully fail under the tests of the fire inspectors.

The European Situation as Viewed by Benjamin Franklin



It appears that even as early as the day of Benjamin Franklin, the methods of European fire-resistant construction were noteworthy, for that eminent philosopher and shrewd observer, in writing from London to a friend in America, had the following to say:

“It appears to me of great importance to build our dwelling houses, if we can, in a manner more

secure from danger by fire. We scarcely ever hear of fire in Paris. When I was there, I took particular notice of the construction of their houses and I did not see one of them that could well be burned. The roofs are of slate or tile, the walls are of stone, the walls generally lined with stucco or plaster instead of wainscot. The floors are of stucco or of those square tiles burned brown, or of flagstone or of marble. The stairs, too, at Paris are either stone or brick with only a wooden edge or corner for the step, so that on the whole, though the Parisians commonly burn wood in their chimneys, a more dangerous kind of fuel than that used here, yet their houses escape extremely well, as there is little in a room that can be consumed by fire except the furniture, whereas in London, perhaps scarcely a year passes in which half a million of property and many lives are not lost by this destructive element. Of late, indeed, they begin here to leave off wainscoting their rooms, and instead of it cover the walls with stucco, often formed into panels like wainscot, which, being painted, is very strong and warm. Stone staircases, too, with iron rails, grow more and more into fashion here.”

The people of Europe, due to the influence of an older civilization, are naturally more cautious and saving. In a land where fortunes are not easily made and where each generation tries to add its mite to the savings of the past, it is readily understandable that a man, contemplating the erection of a home, does everything in his power to safeguard his slowly acquired fortune.

Another fact of great significance. The law in the majority of the European countries deals stringently with owners of buildings wherein a fire originates. Through a well organized and efficient system of fire marshals, each fire is strictly investigated and the guilty parties punished for their part in it, even though it be through negligence or ignorance.

Would You Report a Murder?

When one realizes that the majority of the fires caused in the United States are preventable, it would seem that the American people are guilty of countenancing criminal negligence. We raise our hands in righteous indignation against the thief, the footpad and the burglar; we shudder when reading of the outrageous action of the depraved murderer

of women or children. What then should be our attitude toward the man who lightly scoffs at fire and fails to use a modicum of care in defense against that fiend, Fire—the greatest murderer and pillager of our country?

More Thought Must be Given to Fire-Retardant Construction

Let us discuss the phase of constructing our buildings so that they may be as fireproof as possible. Of course, in modern building there is no construction that is absolutely fireproof, and when we speak of a building as being such, we mean that it will retard the progress of flames for a certain length of time and is not conducive to a general conflagration.

To these buildings should be added the terms "death proof" and "conflagration proof."

Fire must be destroyed in its incipency and buildings should be so constructed that a fire will be confined to the place of its origin until the arrival of the fire department. Means of safety, both to persons and property, must be assured by making impossible the instant conversion of elevator shafts and stairways into flues for the flames, and by making impossible the rapid spread of flames from room to room and floor to floor.

Although the great fires of this country have occurred, for the most part, in places of manufacture, theatres and large public buildings of one kind or another, nevertheless the majority of all the fires and a very large portion of the fire losses belong to the dwelling house.

Who is to Blame?

There is a fundamental mistake which has been the cause of much loss and suffering in this country, and which arises from a wrong idea as to the construction of the small house. If we estimated the number of buildings in the United States as twelve million,



Page four

it is safe to say that of this number probably eleven millions have been built in entire disregard of the combustible nature and arrangement of their materials.

Because plaster is noninflammable, the average man presumes that it is an effective retardant to fire and there his reasoning stops. But, suppose a spark lodges in back of that plaster which is only natural—for when the heat dries out the plaster, it falls from its base—what will then happen? In the majority of structures, where metal lath and fire stops have not been used, the walls are nothing but a series of connected flues whose chief function in the event of fire is to quickly conduct the flames to every part of the house. In another page of this magazine is explained and illustrated the method of building fire protection into the home by the use of metal lath. It is the duty of every man who has it in his power to sway the judgment of the prospective home builder to explain this method of building into his home, protection not only from fire to his family but protection to his neighbors from a conflagration.

Architect, Contractor, Engineer, Owner —All Must Work Together



It behooves us, as a humane and intelligent people, to call a halt to this national waste. Instead of casually remarking upon the size of the annual fire waste when it is quoted in dollars and cents, rather we should visualize the misery of those who have seen the savings of a lifetime go up in smoke or the indescribable anguish of those who have had their beloved ones perish in a horrible flaming death. This depiction of the annual fire report coupled with the realization that Fire is a brother of the Grim Reaper who strikes without warning, should cause us to pause and ask ourselves the question: "Am I trying to prevent the visitation of this destroyer to my home?"



This is a scene of the recent Chicago disaster. The Burlington Building is that one shown in the right-hand corner. Although of the "fireproof" type, all of the contents of this building were destroyed.

Can Buildings Be Made Fireproof?

By Clarence W. Noble, Associate Member, Am. Soc. C. E.

A lexicographer would have a difficult time to define the word "fireproof," giving it the meaning with which it is used by the average man. Should he ask what it means when applied to a building he would doubtless receive the reply that it means a building which will not burn. Were he to ask if it would apply to an office building having a steel frame, tile floors, tile partitions and terra cotta tile outside walls the reply would doubtless be the affirmative. The inquirer, however, might find out that the Burlington Building in Chicago was such a structure, and that when this building was gutted by fire the partitions were largely destroyed because they expanded and crushed themselves against the ceiling, and that the soffits of the tile floors were destroyed by being spalled off by the heat. Mr. Average Man, with his poorly-defined ideas, might, in reply to this, shift his definition of fireproof construction to a reinforced concrete structure, but against this could be cited the case of the Edison fire, in which the heat was so intense that the sides of reinforced concrete beams built with a limestone aggregate, melted, and were found after the fire hanging from the bottoms of the

beams like icicles. Mr. Average Man, if he continued argumentative might then point out that the contents of a blast furnace at a certain portion of its height are normally made up largely of melted limestone, and that as the blast furnace runs continually day and night it must necessarily be fireproof. To this the inquirer would naturally reply that all blast furnaces have to be shut down at frequent intervals for relining, and with this reply it is to be hoped that the conception of a perfectly fireproof structure would be driven out of Mr. Average Man's head.

Actually there is no such thing as a "fireproof" structure. The word implies perfect ability to resist the attack of fire, and perfection is something that is not obtainable by human beings. The word should be replaced by the word "fire-resistive," and discussion of the subject should always include the idea that the degree of resistance which is necessary is fixed by the probable intensity of the fire which is to be resisted.

It is the gradual realization of the fact that the so-called "fireproof" building is an unattainable

ideal that has discouraged the attempt to develop better fire-resistive construction for ordinary structures. In Europe where the prevailing type of building follows a precedent which was laid down in the Middle Ages, the per capita fire loss is but a small fraction of that of the United States. This is in spite of the fact that the so-called "fireproof" types of structures were developed in this country, and that their ordinary construction looks antiquated to us. The reason is that they have inherited a type of building construction which, for ordinary size building, is reasonably fire-resistive against the degree of fire that is apt to occur in a building of that size. The lesson is obvious. We, in this country, have long been accustomed to paying no attention whatever to the fire-resistive features of ordinary buildings. If the importance of the building were not sufficient to justify an expenditure necessary to build it in steel and terra cotta, or in reinforced concrete construction, we have designed it as though it would sooner or later fall a prey to the flames anyway and we might as well make it as cheap as possible in consequence. If our architects, for the last fifty years, had given one-tenth as much study to the development of adequately fire-resistive construction for ordinary size buildings as they have done to the so-called "fireproof" construction for monumental buildings, fire losses, and consequently our insurance cost, would be at the most not over one-fifth of what it now is.

It is not necessary that an isolated building of ordinary size should be built entirely of incombustible material in order to be reasonably fire-resistive. It takes two to make a quarrel. It takes two elements to make a fire—fuel and air. If free air can be kept away from the wooden framework of a house it is reasonably safe against an ordinary fire.

Herringbone Lath and Plaster will do it. The air passages between joists and studs should be carefully fire-stopped with bulkheads made with Herringbone Lath and Plaster or made with Herringbone Lath Baskets which are filled with concrete. Wood laths, which warp as soon as the fire strikes them, thus throwing off their plaster protection and admitting the flames to the wood framework, should be omitted in all instances, and Herringbone Lath put in their place. Outside walls of cement stucco on Herringbone Lath (back-plastered construction) are now definitely cheaper than outside walls of clapboards with paint.

An ordinary residence, made adequately fire-resistive by the use of Metal Lath, can be contracted for at so closely the price of an ordinary combustible structure that the architect when opening his bids would not be able to judge from the quotations alone whether or not the fire-resistive features were included or omitted by the contractor. It is very reasonable to assume that the low bidder out of a group of four or five bids could add the fire-resistive features to his quotation and still remain under the high quotation. It is an assured fact that a residence thus treated is as adequately able to resist any fire to which it could be exposed as is a modern so-called "fireproof" office building able to resist the greater conflagrations to which it may be exposed.

The day of the fire-resistive ordinary building is now here. Such buildings can be made reasonably safe against fire by precautions so inexpensive when compared to the values that are protected, that a prospective builder does himself an injustice if he does not use them. So, too, the architect or contractor, when building for his client, owes it to his client to tell him of the relative cost of inflammable and fire-resistive construction and let him decide for himself the choice between risk and safety.



PHOTO BY UNDERWOOD & UNDERWOOD

Adequate fireproofing would have prevented this

DATA SHEET..

OCTOBER — 1922

The GENERAL
FIREPROOFING
COMPANY

A. I. A. Standard File

Specifications and Facts

about

GF Diamond Rib Lath, Self-Sentering, and how to build a Back Plastered Metal Lath Stucco House

GF Diamond Rib Lath

GF Diamond Rib Lath is the new member of the Self-Sentering family with ribs reduced in height and spaced 4.8 inches apart to make an exceptionally stiff metal lath—a labor and material saver, therefore a money saver.

The V-shaped ribs are cold drawn, not folded, which means a material increase in the elastic limit of steel.

The wide strand diamond mesh between the ribs takes the plaster easily and rapidly but without waste. Years of experience have shown this type of mesh to be one that will stand the severest use.

Rapid erection results from using a smooth sheet that can be easily handled. Economy results from the perfect fit of the interlocking ribs along sides and at ends and from the reduced number of fastenings to supports.

Material is saved by spacing supports farther apart without sacrificing stiffness of plaster.

GF Diamond Rib Lath on Suspended Ceilings

On suspended ceilings, as in the case of ceilings directly below floors, a perfect key is obtained by the use of GF Diamond Rib Lath.

On account of the rigidity of the ribs, the cross channels in suspended ceilings may be spaced farther apart than with ordinary lath. This allows a saving of material and labor of erection without increasing the cost of plastering.

GF Diamond Rib Lath on Partitions

For partitions with either metal or wood studs a saving in both studs and labor of erec-

tion may be made by spacing studs farther apart than is possible with the ordinary type of flat lath. This does not increase the cost of plastering, because there is no springing of lath between studs, with consequent extra thickness of plaster.

Diamond Rib Lath Floors on GF Steel Lumber

SAG.—The greatest economy in Steel Lumber is always obtained by using largest suitable section on the widest standard spacing, the maximum being 23½ inches. A portion of the saving afforded by this spacing is lost if the lath used to support the floor sags between joists.

Many laths used with Steel Lumber will deflect or sag over this span, which means a loss to the con-



*Diamond Rib Lath Floor and Ceiling on GF Steel Lumber
Somerset High School, Somerset Pennsylvania
Regamont & Walker, Architects*

Note that ceiling lath is attached to joists by clips. Joists are spaced 23½" centers and floor above shows no sag

tractor. An average of three-fourths of an inch deflection which frequently occurs, means three-eighths of the entire area of concrete required to form the floor—more than enough to pay the extra cost of a lath which will not sag.

This waste can be cut to a minimum by the use of rigid GF Diamond Rib Lath.

DRIP.—Loss of concrete by dripping through the lath is another waste. Due to the small size of the diamond mesh, this loss will be eliminated by using GF Diamond Rib Lath.

The best method of attaching the lath to top or bottom of steel joists is by using our spring wire lath clips as shown in the cut.

GF Diamond Rib Lath Ceilings under GF Steel Lumber or GF Steel Tile

RIGIDITY.—For ceilings directly under Steel Lumber or Steel Tile, on a clear span of 20 inches, it is necessary to use a ribbed lath to prevent springing under the pressure of the trowel. This requirement



Phantom Drawing of Lath Clips Above Joists

of rigidity is thoroughly satisfied by the use of GF Diamond Rib Lath.

KEY.—A perfect key is secured on GF Diamond Rib Lath without excess or waste of mortar.

The uniform strands present an ideal flat plastering surface, while the mesh openings permit the penetration of enough mortar to assure a perfect bond and thorough embedment of the metal without waste.

Cost of Back-Plastered Metal, Lath and Woodsided Construction Compared

The Associated Metal Lath Manufacturers has recently compiled from very many sources cost data which clearly brings out the substantial saving gained by using back-plastered metal lath stucco construction.

- (1) Back-plastered metal lath
stucco construction. . . . \$2.17 per sq. yd.
- (2) Clapboard sided house
painted 3.23 per sq. yd.

(These items include studding, but not profit or overhead expense.)

These figures also bear out the oft-repeated statement heretofore made that any type of stucco on metal lath construction is much less expensive than the common clapboard sided house.

Normally the only difference is cost between the back-plastered type, and the sheathed type in which metal lath is used, should lie in a comparison between the cost of the sheathing and the labor to apply it as contrasted with the cost of the back-plastered coat, all the other elements which go into the construction of such types being practically identical as far as the material and labor costs are concerned.

Comparing the stucco house with the clapboard sided house we find that while the cost for materials and labor on the stucco and Metal Lath items are closely offset by corresponding costs for materials and labor on the sheathing and clapboards, there is no cost entering into the construction of the stucco house to offset the unusually large item for painting the clapboard house. This cost is estimated at approximately 75 cents a square yard.

To clearly bring out the large differential in favor of the stucco house we will use an ordinary two-

story single family dwelling, with a ground area of 20' by 30', and containing approximately 200 square yards of wall surface.

We find that there is a saving of \$200.00 for the metal lath sheathed stucco house as compared with the clapboard house. Besides, the clapboard house will cost \$150.00 extra every third year for painting.

A back-plastered metal lath stucco house shows a saving of \$65 over the sheathed metal lath stucco type, and over \$265.00 less than the clapboard sided house.

NOTE.—These last figures on comparative costs include contractor's profit.

If She Had Only Used Metal Lath in all of the Five Vulnerable Points!

"June 28, 1922.

Arden, Buncombe County,
North Carolina.

Associated Metal Lath Mfrs.,
Chicago, Ill.

Dear Sir:—

"My house recently burned to the ground. It was built in part of concrete on metal lath. After standing for thirty years the metal lath with the concrete fell in some parts in sheets 8 x 8 ft. without breaking—I found the lath most satisfactory and enduring—I wish to rebuild at once and want all information possible.

Very truly yours,

(Signed) Mrs. C. W. Beale."

How to Build a Back-Plastered Metal Lath Stucco House

By ERWIN M. LURIE

Associated Metal Lath Mfrs., Chicago, Ill.

The outline drawing shown herewith has been prepared to answer many inquiries received by the Associated Metal Lath Manufacturers concerning Back-Plastered Metal Lath Stucco.

Minute building details are clearly brought out to show how simply the erection of such a wall really is. The showing of correct methods automatically eliminates incorrect details used by the inexperienced, and it is expected that the publication of this drawing will do much to heighten the interest in this already popular style especially adapted for

homes and apartments, for the construction of small stores, schools and similar buildings.

An interesting feature of this diagram is that the detailed specifications are given in the order in which construction usually proceeds. There is first an important note regarding the foundation walls, then come specifications for framing and bracing. Next come directions on application of the metal flashing, the proper weight of Metal Lath, as sanctioned by the Associated Metal Lath Manufacturers, the size of nails and their spacing. Following this come details of the stucco, the insulation and fire-stopping, in order of application.

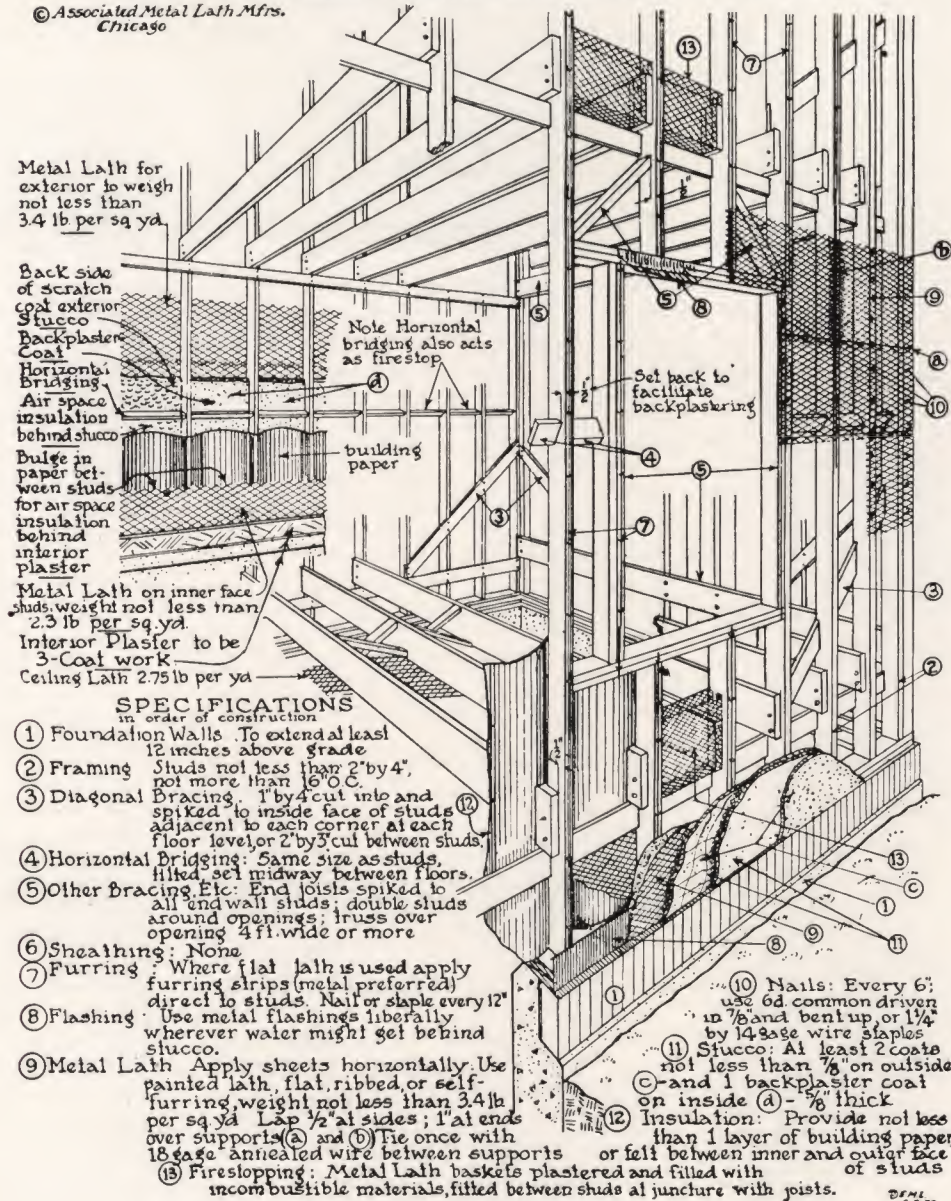
Back-Plastered construction has been in use in several sections of the country for over 15 years.

The construction as specified herein has been tried and successfully passed strength and endurance tests by the U. S. Bureau of Standards, Armour Institute of Technology, and before the Omaha Building Code Committee; it has been tested for the heat losses at Armour Institute in trials which clearly showed it to be much warmer than many common forms of construction, and been tested for fire-resistance at the Underwriters' Laboratories at Chicago which, after exhaustive tests issued a preliminary report indicating a one-hour rating.

Back-Plastered Metal Lath Stucco construction combines the economies of good frame construction with the permanence and fire-resistive qualities of reinforced concrete. Houses of this type will cost less than any other form of stucco, frame or masonry construction.

BACK-PLASTERED METAL LATH STUCCO CONSTRUCTION

© Associated Metal Lath Mfrs.
Chicago

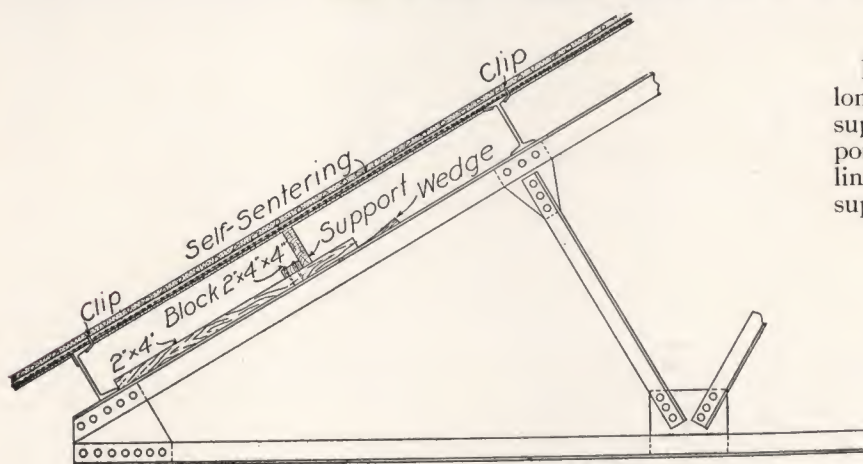


Industrial Publications, Inc., 407 So. Dearborn St., Chicago, Ill.

Methods of Erecting Temporary Supports Required on Long Spans



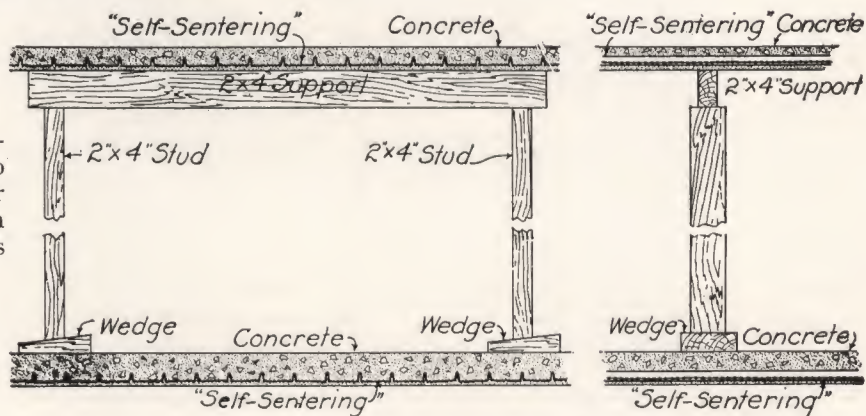
Extreme Simplicity of Erecting Temporary Supports on Long Spans



Temporary Supports on a Pitched Roof

If spans between trusses are too long to be spanned by 2-in. x 4-in. supports shown, intermediate supports may be placed between purlins, resting on the lower flanges or supported by wires.

This method of erecting supports, where story height is not too great, will often be found simpler and more economical to erect than by attaching supports to purlins and trusses.



Temporary Supports on Flat Roof

THE RIGHT ANGLE

Published by

THE GENERAL FIREPROOFING COMPANY
Youngstown - - - - - Ohio

DOUGLAS S. FRANKLIN, Editor

"An Ounce of Prevention"

—is worth a pound of cure! An old saw, time-honored and teeth-worn with constant repetition by those trepid "old fogies" who are "afraid to take a chance!"

However, now and then, there occurs some slip-up, such as the Collingwood School disaster or the Triangle Shirtwaist Company fire in which 146 humans lost their lives, but, in America, where every dollar must make another dollar count, it is a fallacy not to take a chance. That "ounce of prevention" which, if used, though it would cut our enormous fire-loss, means money without "turn-over" and non-productive.

Of course, in the event of a fire which would wipe out of existence not only a factory but its occupants as well, it would mean considerable more of an expense than that "ounce." But then—permit us the use of another old phrase—"why cry over spilt milk?" Think of the sport that we had in taking the chance with our property, our neighbors' property and our neighbors' lives!

We can keep up this hazardous sport just so long as we keep public opinion unenlightened as to the unnecessary loss of life and property that is caused through our carelessness or neglect. And, until that time, we can lay the blame of our fire losses at the door of misfortune rather than to our own criminal negligence.

Are We So Rich We Can Afford This?

From special reports of the United States consuls in Europe, it has been shown by the committee on statistics of the National Board of Fire Underwriters that the average per capita loss in six European countries for a period of five years was thirty-three cents. That of the United States alone was \$3.02.

Since that report, which covered the years from 1901 to 1905 inclusive, our per capita loss through fire has almost doubled. If the Europeans have such an efficient method of keeping down their fire-losses, could we not well afford to adopt their plans of fire-prevention?

THESE PLACES, VULNERABLE TO FIRE, ALWAYS REQUIRE METAL LATH FOR PLASTER

1. All stud-bearing partitions and walls, and fire stops between studs. (Fire stops to be of Metal Lath, basket-shaped, to fit between studs, coated with plaster or cement and filled with incombustible materials.)
2. Ceilings under inhabited floors, especially over heating plants and coal bins.
3. At chimney breasts, around flues and back of kitchen ranges.
4. Stair-walls and under stairs.
5. As a base and reinforcement for exterior stucco.

Use on ceilings of prominent rooms and in corners to prevent cracking.

Some "Don'ts" That Help Prevent Fire

DON'T

run away from a small fire leaving the windows and doors open. Open doors and windows cause a draft and the little blaze will change into a real fire that the fire-fighters will find hard to extinguish when they arrive.

DON'T

forget that all fires are the same size at the start.

DON'T

throw matches carelessly around.

DON'T

keep matches in the house that will strike anywhere but on the box. Those who are not familiar with the records of fire-fighting or have not had access to the Fire Marshal's reports in their city or town, would be astonished at the number of fires that have been caused by rats nibbling the so-called parlor matches.

DON'T

allow rubbish to collect in your basement or attic.

DON'T

fail to protect your furnace or stove. They should be carefully guarded by asbestos or metal covering over any adjacent woodwork. Floors over furnaces should be protected by a ceiling of plaster on Metal Lath.

DON'T

lose your head. Remember that the crucial point with every fire is its beginning. There is no cause for alarm simply because there is a hot spurt of flame and a cloud of smoke. A little common sense, combined with prompt execution, will end the matter before it has attained any serious proportions.

DON'T

build structures that are promotive of conflagrations.

Another Wardman Apartment

We have received many favorable comments upon the May issue of the RIGHT ANGLE which featured the work of Mr. Harry Wardman of Washington, D. C., but one of the most interesting ones, from our point of view, is the one which Mr. H. R. Eastwood, President of the Southern Building Supply Co., sent us. In his letter, Mr. Eastwood, who first interested Mr. Wardman in Herringbone, states that Mr. Wardman is now engaged in erecting an apartment building that will surpass any of his past achievements, and that, of course, Herringbone Metal Lath is specified on the job.



*The Pennsylvania R. R. Station, New York City
Architects: McKim, Meade & White*

Herringbone Built of Armco Iron

Metal Lath for use where there is any possibility of corrosion arising from salt-sea atmosphere, exceptionally moist climates, electrolysis, should be made from the purest iron that it is possible to manufacture.

The result of the American Rolling Mill Company's tests has proven the adaptability of Armco Iron for our special Herringbone Lath.

It is known that the modern steels contained high percentages of impurities such as carbon, manganese and sulphur. The action of these particles promotes an action which is similar to that taking place in a battery; the foreign sub-

stances, acting as opposite poles, with the aid of the ever-present mineral salts induces an electric current, producing electrolysis, thus facilitating oxidation.

The iron of olden times having but slight admixture, was, relatively speaking, a pure iron less capable of electrolytic action. The solution of this problem is American Ingot Iron (Armco). In this, the total of impurities is less than one-sixth of one per cent, a standard never before obtained. Every phase of its production is so scientifically guarded to the end of producing perfect material that the name "Armco" and Herringbone Armco Iron Lath is synonymous with "rust-resistance."



*The Woolworth Building, N. Y. C.
Herringbone Armco Metal Lath Ceilings
Architect: Cass Gilbert*



*Municipal Building, N. Y. C.
Architects: McKim, Meade & White*

Fire-Resistive Qualities of Frame Buildings Protected by Stucco and Plaster on Metal Lath

Excerpts from an address before the Building Officials Conference at Indianapolis, April 26th, 1922

By WHARTON CLAY

Commissioner Associated Metal Lath Manufacturers

Ever since its advent into the building field thirty years or more ago, metal lath has been recognized as a superior base and reinforcement for plaster. Its original use was for solid and hollow partitions, curved ceilings and a base for ornamental plaster work in fire-resistive buildings, but since its crack prevention ability was recognized, and as good quality of wood lath became more and more difficult to secure, it has come to be used with increasing frequency as a base for plaster in wood joisted or frame buildings. In the early days fire prevention was little thought of, and our great national fire waste was not realized by the general public or by the insurance companies, or even by building officials themselves. Years ago, however, building codes began to call for metal lath as a protection over furnaces, behind stoves, around chimney breasts and on positions where the very nature of all other plaster bases made the desirability of metal lath most apparent. . . .

The interior of all buildings is the prime consideration and the one which is most sadly neglected. When 98.9% of all the fires are confined within the building in which they originate, is it not well for us to give more consideration to interiors than to exteriors, and more consideration to interiors than has been given in the past? . . .

It is well recognized by building officials, fire marshals and others, and confirmed by the statistics on fires that they originate in certain specific locations, over the furnaces, in closets, around flues, etc., etc. It is also recognized that if fires do start, their existence is more dangerous if they involve a staircase, the bearing partitions or the inhabited floors, than if they merely involved non-bearing partitions, attic floors or other unimportant parts. . . .

A preliminary report from the Underwriters Laboratories on back-plastered metal lath and stucco construction with Portland cement indicates that

"this finish can be expected to furnish a substantial barrier to the passage of flame into the hollow spaces back of it for about one hour when exposed to fire of the degree of severity to which stucco finished buildings are likely to be subjected under average exterior fire exposures.

This finish can be expected to provide sufficient heat insulation to prevent the ignition of the wooden supports to which it is attached for about one hour when exposed to fire of the degree of severity to which stucco finished buildings are likely to be subjected under average exterior fire exposures."

Thus, the Underwriters' tests show we can adequately protect our frame building by the use of exterior stucco on Metal Lath.

The floor test was equally successfully, gypsum plaster $\frac{3}{4}$ " thick on 2.7-lb. expanded metal lath, attached by 6D nails on 6" centers was employed. This protected the wood joists which were, during the entire hour and fifteen minutes, loaded to 50 pounds to the square foot, uniformly distributed. The floor was a double floor with Cabot's quilt insulation between the rough and finished floor. The rough floor was not tongued and grooved, and every opportunity was given for the fire to come through. No smoke or flame passed, nor was the underside of the rough flooring charred in any part that had yet been removed. The bottom sides of the joists were charred to a small degree, but not enough to weaken the joists to any extent. The depth of charring may have been slightly greater than with the studs, but the sides of the joists are clean and there is no evidence of them actually taking fire. . . .

Fire protection materials have two main functions. They must be incombustible in themselves, and they must stay in position even after they have received the inevitable deterioration due to the fire. . . .

The function of metal lath and its superiority over other lathing bases comes from its ability to reinforce the plaster, and to hold it in position after it would have fallen off and become useless on other bases.

The material which can protect steel, concrete and lumber until the firemen can get the fire under control has served its purpose.

Thus we have the present-day solution to the fire-resistive frame house. We can build a frame house by using metal lath and stucco on the exterior which will be as safe from external fire as any building with the same interior construction, and with unprotected windows. We can build an interior of ordinary lumber construction with studs and joists and protect it from a fire of duration and intensity which is without doubt more destructive than the fire that is likely to occur in a residence or even in most mercantile occupancies. Or we can protect the vulnerable or important structural parts only, of such a building, so that the safety of the property is increased to an almost equal degree, because non-bearing partitions, etc., do not contain enough fuel to in any way damage the balance of the structure if protected by metal lath and plaster.



**Fanatic Francis
says "There aint
no use for Fire
Prevenshun"**



Editor of Rite Angel

DEER EDITER:

I promised you that in your next magazine i wood tell you about how i become a sub-contractor but i heard as how you were going to get out an ishue of the rite angel tellin folks that they should

bild there houses out of fire proof materiels so that there woodent be no more fires and wile i ain't tryin to critiksize you in the least ways i believe that your all wrong so dont publish that fire prevenshun number. Instead you shoold tend to your own nit-ting and not try to bring about some newfangled idees that wood be a catasterfee and throw millyns of honest hard workin people out of work. What with the coal strikes and the rail-road strikes and Will Hayes lettin no akters and akteresses work but them as goes reglar to church, we got enuff people out of work. If you ain't got no fires for the fire departments to fite how do you expekt that theyre going to get along. They ain't trained in no other perfesshun exceptin maybe penuckle and if you go and get foolish idees into peeples heads like bildin houses that wont burn why your just robbing the bred out of the fire department mens mouthes.

May be as you say fires ain't no good and maybe they do lose a lot of peeples lives per year but i sez that there ain't nothin bad but what some good comes out of it. Every one of them people which kicks out in a fire hast to be berried and that means work for the under-Taker and the coffin which he uses means work for the cofin mfgs. and they haff to have wood which means work for the lumber men and so forth and etc.

Sposin that you were a mfg of fire eskapes or fire ekstingwishers how wood you like it if sum bird come along with a idee like yours wich wood put

you out of bizness? Just stop and think of all the trades that would be effected if there was no bild-ings burnt by fire. Think of the milyuns of fire insurence solisitors that would have no excuse to see you on your bizzzy day. Think of the architecks the contractors the supply men the manyfacturers the laborers that wood lose by such a crazy fool skeme as yours.

Why take your own selfs for incidence. Dont you know that you are hittin at your own bizness. How mutch of your herringbone would you sell if a lot of houses didn't burn per year and haff to be replaced by houses wich you replace with herring-bone? And ile bet hears sumthing that you aint thot of—how about them fire proof safes that your company makes? How many of them do you expect you will sell when every one is doin bizness in a bilding wich wont burn. Just betwean me and you Ed. i woodent be so strong on this hear fire prevenshun stuff becoz it mite mebbe get you in dutch with your boss when he finds out that you are avocatin sumthing wich will meen less sales for the firm.

I was tellin a frend of mine about how i stood on this fire prevenshun week and he sprung a abso-lutely new joke on me. He sez that in case you got a fire in your bilding why to just throw up the win-dow and watch the fire eskape. I thot that was pretty good and told Mirandy but as she aint got a sence of umor like me and you she didnt crack a smile.

But forgettin the funny stuff Ed. i am reel serius about this fire prevenshun and what it will do to bizness. My goodness what will become of our firemen and bilders and insurence companys and manyfacturers and so forth etc, if they aint got nothing to work on.

You think it over and see if i aint rite and dont forget to send me my 3 dollers and 50 cents wich you owe me for my last letter.

Yours for better bizness.

FANATIC FRANCIS.

Self-Sentering

A Reinforcement With Added Carrying Capacity



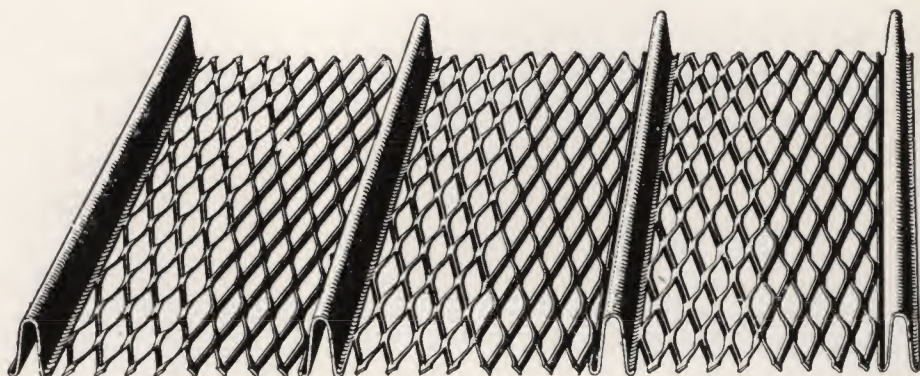
*Photograph of Test With Maximum Load (500 lbs per sq. ft.)
Failure Began at This Point*

Self-Sentering is made up of a parallel series of heavy, cold-drawn ribs, $\frac{11}{16}$ inches high, always spaced $3\frac{5}{8}$ inches center to center, connected by the most efficient form of expanded metal—diamond mesh—all cut and drawn from one sheet of steel.

All the metal helps to carry the load; there are no superfluous cross connecting members; every ounce of metal is in tension.

Self-Sentering is a type of expanded metal reinforcement for concrete construction that means speed, economy and permanence in building. It precisely measures up to modern requirements. More than that, it has established a method of construction at once original and standard.

In itself it is a combined reinforcing and centering for roof and floor construction—a one-piece lath and stud—a self-furring lath.



Patented March 3, 1914—Other Patents Pending

The word
"Self-Sentering"
on Specifications
assures your client
careful attention to
permanency

—
**May we show you
why?**
—

The Post Card is for your
convenience

Gentlemen :

I will be interested in receiving

- ☐ Literature about Self-Sentering
- ☐ Samples of Self-Sentering

This, of course, is without obligation on my part.

Name _____

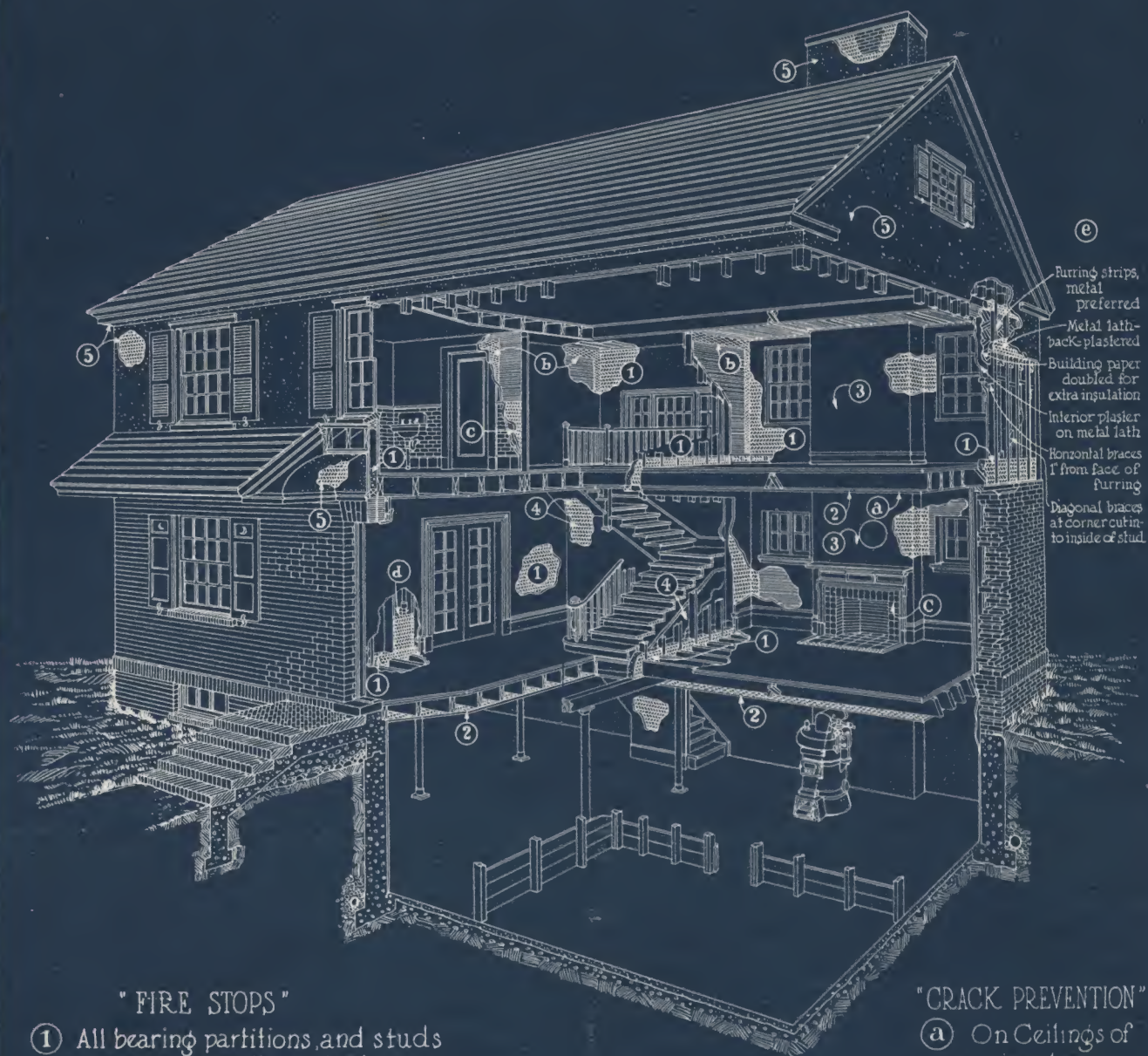
Firm _____

Street _____

City _____ State _____

19____

Five Vulnerable Points Requiring Metal Lath for Fire Protection



Furring strips,
 metal
 preferred
 Metal lath-
 back-plastered
 Building paper
 doubled for
 extra insulation
 Interior plaster
 on metal lath
 Horizontal braces
 1" from face of
 furring
 Diagonal braces
 at corner cut-in-
 to inside of stud

" FIRE STOPS "

- ① All bearing partitions and studs in exterior walls including a basket to hold incombustible material as a fire stop
- ② Ceilings under inhabited floors, especially over heating plants and coal bins.
- ③ At chimney breasts, around flues and back of kitchen ranges.
- ④ Stair-wells and under stairs.
- ⑤ As a base and reinforcement for exterior stucco.

" CRACK PREVENTION "

- Ⓐ On Ceilings of prominent rooms.
- Ⓑ Lap 6" on either side of wall and partition angles, and around door bucks.
- Ⓒ Back of wainscots and tile mantels.
- Ⓓ Across plumbing-pipes and heat-ducts
- Ⓔ Showing proper construction of exterior stud walls for successful stucco

Five Vulnerable Points Requiring Metal Lath for Fire Protection



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<http://seaa.tulane.edu>

- ① back of kitchen ranges.
- ② Stair-wells and under stairs.
- ③ As a base and reinforcement for exterior stucco.

- ④ Showing proper construction of exterior stud walls for successful stucco.